

Salmon Program

State Recovery Projects

Application Project Summary

| | | | |
|---|-----------|-------|---------------------------------------|
| TITLE: Hamma Hamma ELJ & Off Channel Restoration-146 | | | NUMBER: 09-1677R (Restoration) |
| | | | STATUS: Preapplication |
| APPLICANT: Hood Canal SEG | | | CONTACT: |
| COSTS: | | | SPONSOR MATCH: |
| RCO | \$81,000 | 41 % | Force Acct - Labor \$2,448 |
| Local | \$119,000 | 60 % | Grant - Federal \$91,552 |
| Total | \$200,000 | 100 % | Grant - Private \$25,000 |

DESCRIPTION:

The site has been identified with significant ecological impairment where restoration is most likely to be effective, and where access and protection can be secured. This phase was necessary to assess the site and define the restoration strategy.

Two (2) actions directly address the cause of river estuary degradation and are the best available alternatives to accomplish the restoration goal:

1. Despite frequent and long standing negotiations with the landowner we have been unable to secure permission to remove the dikes that channelize the last ¼ mile of the ESA bearing river. The resulting channel is swept clear of all natural LWD; meander and cover. The only alternative is to add Engineered Log Jams (ELJ) to provide habitat and cover from predators for salmon in the river channel.
2. Recent natural erosion of the south dike has resulted in a several acre shallow depression suitable for off-channel fish habitat. We have secured the rights to improve this area and add LWD and natural vegetation in order to mitigate the effects of the adjacent artificial river channel by adding several acres of fish rearing habitat at the river mouth. Therefore the HSCEG will improve access to an additional 2.5 acres of salt marsh for migrating juvenile salmonid access by increasing the channel into the restored salt marsh and adding LWD to provide cover for juvenile salmonids.

LOCATION INFORMATION:

LEAD ENTITY ORG: Hood Canal Coor Council LE

COUNTY:

GOAL & OBJECTIVE:

The goal of the project is to restore estuarine and nearshore conditions and processes in the marine environment.

The objective of the project is to restore shoreline habitat diversity and function.

SALMON INFORMATION: (* indicates primary)

Species Targeted

| | |
|-----------|------------------|
| Chinook | Rainbow |
| Chum* | Searun Cutthroat |
| Coho | Steelhead |
| Cutthroat | |

Habitat Factors Addressed

| | |
|---------------------------------|-------------------------------|
| Channel Conditions | Streambed Sediment Conditions |
| Estuarine and Nearshore Habitat | Water Quality |
| Floodplain Conditions | Water Quantity |

| | |
|------------------------------------|------------------------------------|
| LAST UPDATED: June 24, 2009 | DATE PRINTED: June 25, 2009 |
|------------------------------------|------------------------------------|

Restoration Cost Estimate Summary

Hood Canal SEG

Hamma Hamma ELJ & Off Channel Restoration-146

09-1677 R

Salmon State Projects

| Element/Item | Unit | Quantity | Unit Cost | Total Cost | Description Needed | Description |
|----------------------------------|-----------|----------|--------------|---------------------|--------------------|--|
| Worksite #1, South river channel | | | | | | |
| Estuarine/Marine Nearshore | | | | | | |
| Shoreline restoration | Linear ft | | \$170,000.00 | \$170,000.00 | Describe | Three (3) main channel ELJs and 2 Acre off channel habitat |
| Project Tax Amount | | | | \$0.00 | | |
| Project A&E Amount | | | | \$30,000.00 | | |
| Project Total Costs | | | | \$200,000.00 | | |

Project Name:

Hamma Hamma Engineered Log Jams & Off-Channel Habitat RestorationApplication Date **10/17/2008**PRISM Record # **08-2158**

Project Sponsor **Hood Canal Salmon Enhancement Group (HCSEG)**

Project Contact **Neil W. Werner**

Address1 **PO Box 2169**

Address2 **22881 NE St. Route 3**

City/State/Zip **Belfair, WA 98528-2169**

Alternate Contact **Mona Pillars**

Phone **(360) 275-0373**E-mail neil@hcseg.orgProject Co-sponsor **Skagit County MRC**Action Area **South Central Puget Sound**Alternate Contact e-mail mona@hcseg.org**Formal Description of Scope (2-3 sentences explaining who, what, where, when, and why, with quantities where applicable)**

The entire site has been surveyed and a photographic record established. Engineering and Design will be completed, and all permits obtained. The next phase includes enhancement of the natural breach of the south levee between the main channel and the off-channel rearing habitat, excavation and establishment of off-channel rearing habitat covering approximately 2.5 acres in the estuary, placement of three (3) Engineered Log Jams (ELJ) in the main south channel, planting of aquatic plants and placement of LWD for cover in the off-channel rearing habitat followed by appropriate signage and follow on monitoring.

Estimated Construction Start **7/1/2009**Parcel ID **not applicable**Negotiation **not applicable**Protection **not applicable**Feasibility Phase **not applicable**Design Phase **not applicable**Implementation Phase **not applicable**Evaluation Phase **not applicable****Scale and Location of Action**Shore Form **River-dominated delta**Overall Project Extent **2.5**Extent Units **Acres**Latitude (decimal degrees) **47°54" N**Longitude (decimal degrees) **123°04" W****Budget Summary (derived from worksheet)**Total Request **\$ 91,552.00**Total Match **\$ 108,448.00**Est. Project Cost **\$ 200,000.00**

| Management Measure | Use in Project | Extent of work |
|---|----------------|--|
| Armor Modification or Removal | NA | Breach south side of south armored dike |
| Debris Removal | NA | Remove debris from Dike |
| Overwater Structure Removal | NA | |
| Beach Nourishment | NA | |
| Berm or Dike Modification or Removal | NA | Enhance natural dike breach on the south side of south armored dike to establish off channel habitat |
| Channel Rehabilitation or Creation | NA | Create a channel between the main channel and off-channel rearing basin |
| Hydraulic Modification | NA | Contour 2.5 acres of rearing basin |
| Substrate Modification | NA | Place gravel bed in excavated rearing basin |
| Topography Restoration | NA | Contour excavated rearing basin to support fresh water circulation |
| Invasive Species Control | NA | |
| Large Wood Placement | NA | Place three (3) Engineered Log Jams in the main channel |
| Revegetation | NA | Plant native species in the excavated off-channel restoration |
| Species Habitat Enhancement | NA | Creation of off-channel salt marsh and tidal channels |
| Species Reintroduction (Non-Plant) | NA | |
| Contaminant Removal or Remediation | NA | |
| Pollution Control | NA | |
| Habitat Protection Policy or Regulation | NA | |
| Physical Exclusion | NA | |
| Property Rights Acquisition | NA | |
| Public Education and Involvement | NA | Civic action with native species planting & educational efforts. |

ESRP Budget Worksheet Instructions

A completed project datasheet and budget worksheet are necessary for an proposal to be eligible for award, and will serve as the basis for contracting. We recognize that this worksheet may require substantial estimation and organization of project costs. In recognition of this investment, this spreadsheet memorializes critical award details, becomes part of our contract, and can serve as the basis for future negotiations concerning supplemental funding of a phased project.

- | | |
|--------------------------------|--|
| STEP 1 Estimated Costs | Estimate project costs for each phase by object class. Please identify project costs consistent with your whole project description included in your data sheet, regardless of what you are asking for ESRP to fund. We request this information because ESRP analyses are focussed on bringing projects to completion. ESRP definitions of 'project' can be found in Appendix C in 'ESRP Strategy and Guidance'. The distribution of costs among tasks will be included in the contract as the allowed reimbursement. Adjustments of costs within a task are allowable with notification. Adjustments of costs between tasks are allowable with notification. For more more information on standard ESRP tasks and deliverables, please reference appendix J in ESRP Guidance, which contains a standard scope of work for restoration projects containing task descriptions and standard deliverables. |
| STEP 2 Summary | Establish realistic target dates for completion of each task. These dates will be included in contract language, but can be renegotiated based on the date of final contract signature and pending notification and justification of project delays. |
| STEP 3 Funding Strategy | Replace the letter code with a description of each additional funding source that will be used to complete the project. Indicate if funds are prospective or secured. Indicate whether the funds source is local, state, federal, tribal or private. Below the description of funding sources you are asked to provide the ammount and source that you will be accounting as 33% match to meet ESRP's statutory match requirements. Columns may be added or deleted. |
| STEP 4 ESRP Request | Identify the funds you are requesting from ESRP. Recognize that final award may be partial, however partial awards typically aim to complete substantial phases of work and are determined in consultation with project sponsors. You may indicate estimated costs of future phases of work, and such estimates assist ESRP in demonstrating the need for appropriations in subsequent award cycles. |
| STEP 5 Budget Narrative | Provide a description of costs for each phase of work and object class. Divulge the basis for that cost, and provide supporting documentation where available. |

| Hamma Hamma Engineered Log Jams & Off-Channel Habitat Restoration | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-----------------|------------|-----------|-----------------|--------|-----------|----------|-------------|------|----------|-----------------------|------------------------|------------------|----------------|--------------------------------|--|---|---|---|---|---|---|-----------|
| | Data of application | | 10/17/2008 | | | | | | | | | | | | | | | | | | | | | |
| | | | Summary | | Estimated Costs | | | | | | | ESRP Funding | | Funding Strategy | | | | | | | | | | |
| # | Tasks | Completion Date | Total Cost | Personnel | Fringe | Travel | Equipment | Supplies | Contractual | Land | Indirect | ESRP Award (Received) | ESRP 2009 Request | ESRP Total | Total Leverage | Sponsor cash/in-kind - Secured | Community Based Salmon Restoration Program (State) - Pending | Salmon Recovery Funding Board (Fed) - Secured | C | D | E | F | G | Unsecured |
| 1 | Complete Scope of Feasibility Study | 1-Jun-08 | 1,920 | 1,400 | 420 | 100 | | | | | | | 1,400 | 1,400 | 0 | | | | | | | | | 520 |
| 2 | Complete project conceptual design and feasibility study | 1-Oct-08 | 2,937 | 2,240 | 672 | | | 25 | | | | | 2,240 | 2,240 | 0 | | | | | | | | | 697 |
| 3 | Complete project design through permitting | Spring 2009 | 30,000 | | | | | | 30,000 | | | | 30,000 | 30,000 | 0 | | | | | | | | | 0 |
| 4 | Complete monitoring and adaptive management plan | Spring 2009 | 1,300 | 1,000 | 300 | | | | | | | | 1,000 | 1,000 | 0 | | | | | | | | | 300 |
| 5 | Complete bid plans and specifications | Spring 2009 | 1,300 | 1,000 | 300 | | | | | | | | 1,000 | 1,000 | 0 | | | | | | | | | 300 |
| 6 | Document contractor selection process | 1-Jul-09 | 1,300 | 1,000 | 300 | | | | | | | | 1,000 | 1,000 | 0 | | | | | | | | | 300 |
| 7 | Complete Construction and provide as-built documentation | Spring 2010 | 151,945 | 1,000 | 300 | | | | 150,645 | | | | 47,654 | 47,654 | 108,448 | 2,448 | 25,000 | 81,000 | | | | | | -4,157 |
| 8 | Complete Stewardship and Maintenance Planning | Spring 2009 | 1,300 | 1,000 | 300 | | | | | | | | 1,000 | 1,000 | 0 | | | | | | | | | 300 |
| 9 | Deliver monitoring report | Dec-11 | 6,640 | 4,800 | 1,440 | 400 | | | | | | | 5,200 | 5,200 | 0 | | | | | | | | | 1,440 |
| 10 | Complete Contract Closure | Dec-11 | 1,358 | 1,000 | 300 | 58 | | | | | | | 1,058 | 1,058 | 0 | | | | | | | | | 300 |
| | New task | | 0 | | | | | | | | | | | 0 | 0 | | | | | | | | | 0 |
| | New task | | 0 | | | | | | | | | | | 0 | 0 | | | | | | | | | 0 |
| | TOTAL | | 200,000 | ##### | 4,332 | ## | 0 | 25 | ##### | 0 | 0 | 0 | 91,552 | 91,552 | 108,448 | 2,448 | 25,000 | 81,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | Dedicated ESRP match>> | | 0 | | | | | | | | | |
| | | | | | | | | | | | | Retainage | | 15,000 | | | | | | | | | | |
| | | | | | | | | | | | | ESRP leverage | | 118% | | | | | | | | | | |
| | | | | | | | | | | | | ESRP Dedicated Match | | 0% | 200,000 | | | | | | | | | |
| KEY TO TASKS | | | | | | | | | | | | | | | | | | | | | | | | |
| | Feasibility Phase | | | | | | | | | | | | | | | | | | | | | | | |
| | Design Phase | | | | | | | | | | | | | | | | | | | | | | | |
| | Implementation Phase | | | | | | | | | | | | | | | | | | | | | | | |
| | Evaluation Phase | | | | | | | | | | | | | | | | | | | | | | | |

DATA EXTRACTION

| ProjectName | PRISM | PrimarySponsor | ActionArea | LE-MRC | ESRPRequest | Total Cost | Match | Contact |
|------------------------|-------|----------------|---------------------|--------|-------------|------------|-------|-----------|
| Hamma Hamma Er 08-2158 | | Hood Canal S | 4 | 17 | \$91,552.00 | ##### | ##### | Neil W. \ |
| Hamma Hamma Er 08-2158 | | Hood Canal S | South Cent Skagit C | | \$91,552.00 | ##### | ##### | Neil W. \ |

| E-mail | AltContact | AltE-mail | Address1 | Address2 | CityStateZip | Phone | Description | System | Shoreform |
|--------|------------|-----------|----------|--------------|------------------------|-------------------------|-------------|--------|-----------|
| neil@h | Mon | Pillar | mona@hcs | PO Box 22881 | NE Belfair, WA (360) 2 | The entire site has bee | | | 7 |

neil@h Mon Pillar mona@hcs PO Box 22881 NE Belfair, WA (360) 2 The entire : River delta River-domi

| Extent | | | | ConstructionStart | Parcel IID (A) | | | Negotiation (A) | Protection (A) |
|--------------|---|----------|----------|-------------------|----------------|--|--|-----------------|----------------|
| Extent Units | X | Y | | | | | | | |
| 2.5 | 1 | 47'54" N | 123'04"W | 39995 | 1 | | | 1 | 1 |

2.5 Acres

47'54" N

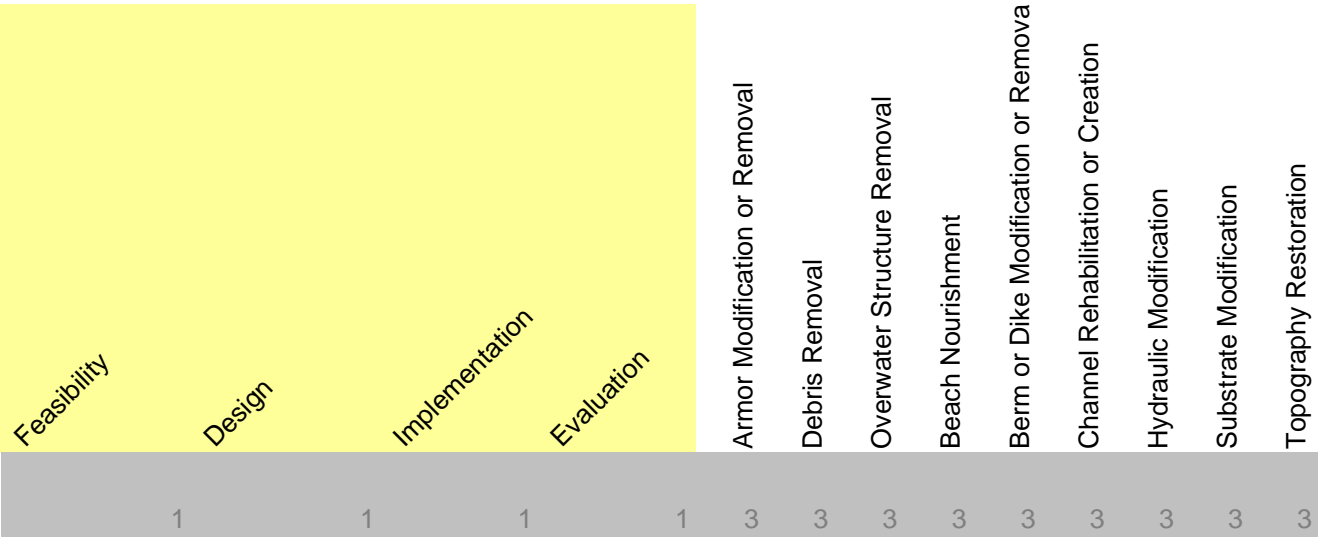
123'04"W

7/1/2009

not applicable

not applicable

not applicable



not applicable not applicable not applicabl not applicabl NA NA NA NA NA NA NA NA NA NA

| | | |
|----|------------------------------------|---|
| NA | Invasive Species Control | 3 |
| NA | Large Wood Placement | 3 |
| NA | Revegetation | 3 |
| NA | Species Habitat Enhancement | 3 |
| NA | Species Reintroduction (Non-Plant) | 3 |
| NA | Contaminant Removal or Remediation | 3 |
| NA | Pollution Control | 3 |
| NA | Habitat Protection Policy or Reg | 3 |
| NA | Physical Exclusion | 3 |
| NA | Property Rights Acquisition | 3 |
| NA | Public Education and Involvement | 3 |

DATA DICTIONARY

Project Data Dictionary

Shore form

- 1 Bluff-backed beach
- 2 Barrier beach
- 3 Closed lagoon/marsh
- 4 Open coastal inlet
- 5 Barrier estuary
- 6 Barrier lagoon
- 7 River-dominated delta
- 8 Wave-dominated delta
- 9 Tide-dominated delta
- 10 Fan delta
- 11 Rocky plunging
- 12 Rocky platform
- 13 Pocket beaches

Management Measure

- 1 Primary
- 2 Supporting
- 3 NA

Phase Status

- 1 Funded
- 2 Proposed
- 3 Pending
- 4 NA

Project Units

- 1 Acres
- 2 Feet of Shoreline

Project Co-sponsor

- 1 WRIA 1 Salmon Recovery Board
- 2 San Juan Community Development (WRIA 2)
- 3 Skagit Watershed Council (WRIA 3,4)
- 4 Stillaguamish Tribe and Snohomish County (WRIA 5)
- 5 Snohomish County (WRIA 7)
- 6 King County (WRIA 8)
- 7 King County (WRIA 9)
- 8 Pierce County (WRIA 10,12)
- 9 Nisqually River Salmon Recovery (WRIA 11)
- 10 Thurston/Mason Conservation Districts (WRIA 13,14)
- 11 West Sound Watersheds Council (WRIA 15)
- 12 Hood Canal Coordinating Council (WRIA 14-17)
- 13 North Olympic Peninsula (WRIA 17-19)

System

- Beach
- Beach
- Embayment
- Embayment
- Embayment
- Embayment
- River delta
- River delta
- River delta
- River delta
- Rocky coast
- Rocky coast
- Rocky coast

Decription

- Formed by landward re
- Formed where sedime
- Back-barrier wetlands
- Protected inlet not exte
- Tidal inlet enclosed by
- Tidal inlet enclosed by
- Alluvial valleys and dis
- Deltas heavily influenc
- Deltas at heads of bay
- Steep often coarse gra
- Rocky shores with no p
- Wave eroded platform
- Isolated beaches conta

Decription

- 14 San Juan County MRC
- 15 Whatcom County MRC
- 16 Island County MRC
- 17 Skagit County MRC
- 18 Clallam County MRC
- 19 Jefferson County MRC
- 20 Snohomish County MRC

Action Area

- 1 San Juan
- 2 Whidbey Basin
- 3 North Central Puget Sound
- 4 South Central Puget Sound
- 5 South Puget Sound
- 6 Hood Canal
- 7 Straits of Juan de Fuca
- 8 Multiple Action Areas

Status Category

- 1 Parcel IID (A)
- 2 Negotiation (A)
- 3 Protection (A)
- 4 Feasibility
- 5 Design
- 6 Implementation
- 7 Evaluation

Phase status

- 1 not applicable
- 2 complete
- 3 funded
- 4 proposed
- 5 pending

reat of shoreline

nt accumulates seaward of earlier shoreline

with no surface connection to Sound

nsively closed by barrier beach

barrier beach with freshwater input

barrier beach without freshwater input

tributaries with extensive upstream tidal influence

ed by wave action; barrier beach defines shoreline

s where tide energy stronger than alluvial factors

ined deltas with limited upstream tidal influence

platform; no beach

; no beach

ained by rocky headlands

PROJECT PROPOSAL – RESTORATION, ACQUISITION, AND COMBINATION RESTORATION/ACQUISITION PROJECTS-2009

INSTRUCTIONS: Salmon Recovery Funding Board applicants must respond to the following items. Please respond to each question individually -- do not summarize your answers collectively in essay format). Local citizen and technical advisory groups will use this information to evaluate your project. Contact your lead entity for additional information that may be required. Limit your response to eight pages.

Submit information via the PRISM attachment process. Application checklists and attachment forms may be downloaded off the SRFB Web site at <http://www.rco.wa.gov/srfb/docs.htm>.

NOTE: Acquisition, Combination, Fish Passage, and Diversions and Screening projects have supplemental questions embedded within this worksheet. Please answer the questions below and all pertinent supplemental questions.

1) PROJECT OVERVIEW

Explain your project overall and include the following elements:

- a) List your primary project objectives, such as how this project will improve or maintain habitat conditions and habitat forming processes.*

The primary objectives of this project are: Increase tidal inundation; allow fish access and use; restore floodplain functions, and water storage.

This project focuses in three critical causative areas:

- 1. Floodplain Connectivity** - In 1958, the landowner constructed a dike, placed riprap and dredged the mouth of the river. A 1930s timber cruise map reveals a 0.3-mile long side channel at river mile 0.8 that is no longer there. Diking and riprap reduce flood flow access to the floodplain (WDFW and PNPTT 2000). An Ecosystem Diagnosis and Treatment (EDT) model conducted for chinook in 2000-2001 determined that 10-40% of the lower river has been disconnected from its floodplain. Floodplain connectivity is good on the north side but has been disconnected from a slough on the south side (TAG 2003).
- 2. Loss of Floodplain Habitat** - The majority of the floodplain is in agriculture, grazing or residential use, which has impacted 35% of the riparian zone (WDFW and PNPTT 2000). SR101 fills former tidal channel and salt marsh habitat, truncates the estuary, and disconnects tidal channels (TAG 2003).
- 3. Large Woody Debris** - Most large wood has been removed from the lower watershed, reducing channel complexity and juvenile fish habitat. Large wood surveys conducted by USFWS indicate 0.12 pieces of wood per meter or 4.14 pieces per channel width (average 35.6 m wide). In the 1100 meters surveyed, there were 24 rootwads, 27 small logs, 40 medium logs and 37 large logs. There were no key pieces (Carrie Cook-Tabor, unpublished data, 1996). Reduction in riparian areas has

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reduced/eliminated recruitment sources for large wood (WDFW and PNPTT 2000)

- b) *State the nature, source, and extent of the problem that the project will address, including the primary causes of the problem, not just the symptoms. Explain how achieving the project objectives will help solve the problem. (Fish Passage projects and Diversions and Screening projects should refer to the supplemental questions later in this worksheet for further guidance on information to include in their problem statement.)*

This project directly addresses several nearshore action recommendations developed for the Hood Canal Coordinating Council (Lead Entity) through the Limiting Factors Analyses (LFA) by the Washington State Conservation Commission and the Technical Advisory Groups (TAG.) These actions are recommended to help achieve salmon recovery, taking into account estuarine and nearshore processes and functions. The parameters used in the LFA process include proximity to priority watersheds as assigned by the HCCC Salmon Habitat Recovery Strategy, spatial scale, temporal scale, and ecological scale. Further, this project is listed as a near-term action in both the Mid-Hood Canal Chinook salmon and Hood Canal/Eastern Strait Summer Chum Salmon recovery plans.

- c) *Describe the fish resources (species and life history stages present, unique populations), the habitat conditions, and other current and historic factors important to understanding this project. Be specific--avoid general statements. Which salmonid species and life cycle stage(s) are targeted to benefit by this project?*

At risks species resident in the Hamma Hamma River include ESA listed Chinook; Summer Chum, and Steelhead. All species are expected to benefit from the project however, it is hypothesized that ESA listed Summer Chum (*O. kisutch*) may benefit the most as their juveniles remain in the nearshore and tidal areas longer than other salmonid species.

The Hamma Hamma River was diked in the early 1900's cutting off normal flow to the North Fork and channelizing the South Fork, essentially cutting of the estuary function to Hood Canal. Adult Chinook, Coho, Fall Chum, Pink, Steelhead, Cutthroat Trout and Summer Chum are all easy prey for marine mammals as they return to their spawning beds due to the channelization of the South Fork, in essence creating a gauntlet for adult salmonids to navigate. The migratory escape route for juveniles is no less peril less as scores of shore birds pick them off as they try to access the marine waters of Hood Canal.

This hypothesis is directly supported by the NST Conceptual Model applied to the affects of juvenile salmon resulting from a dike breach in a natal delta (*Puget Sound Nearshore Partnership Technical Report 2006-6*)

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- d) *Discuss how this project fits within your regional recovery plan or local lead entity strategy (i.e., does the project address a priority action, occur in a priority area, or target priority fish species?).*

The Hood Canal Coordinating Council (HCCC) "Salmon Habitat Recovery Strategy" has identified the project as a TIER 1; Priority 1 habitat area based on current, presumed, and historic distributions of ESA listed salmonid species.

- e) *Has any part of this project been previously reviewed and/or funded by the Salmon Recovery Funding Board? If yes, please provide the project name and SRFB project number (or year of application if a project number is not available). If the project was later withdrawn for funding consideration or was not awarded SRFB funding, please describe how the current proposal differs from the original.*

No. This proposal will supplement an ESRP proposal for the project.

When possible, list your sources of information by citing specific studies, reports, and other documents.

2) PROJECT DESIGN

- a) *Describe the location of the project in the watershed, including the name of the water body(ies), upper and lower extent of the project (if only a portion of the watershed is targeted), and whether the project occurs in the nearshore, estuary, main stem, tributary, off channel, or other location.*

The project is located in the channelized river delta where the ELJ's are placed and the off channel habitat will be located on the south side of and connected to the main river channel.

- b) *Describe the project design and how it will be implemented. Describe the extent of the project. Describe specific restoration methods and design elements you plan to employ. If restoration will occur in phases, explain individual sequencing steps, and which of these steps is included in this application. (Acquisition-only projects need not respond to this question.)*

The project is designed to minimize the need for ongoing maintenance or intervention to sustain the nearshore functions restored due to two (2) primary considerations.

1. Engineered Log Jams (ELJ) as opposed to randomly placed Large Woody Debris (LWD) is engineered in such a way as to minimize interaction with the river current or tidal actions. Well anchored in the water body, ELJ will typically last the life of the composition material which normally lasts 10~15 years. Moreover, natural LWD recruitment over time will tend to replace the engineered material as it reaches the end of its lifecycle.
2. The off channel restoration portion of the project is protected from normal course gravel aggradations as it is outside the limits of the main river channel and protected by the existing river dike. Tidal actions will over time affect the reconstructed off channel habitat making it even more natural and therefore more productive.

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Direct beneficial habitat attributes include: Increased tidal channel complexity; Emergent marsh vegetation; Salinity; Turbidity; Temperature; Increase benthic and insect production

Direct beneficial functions include: Increase in residence time; improved physiological transition; increase survival due to avoidance of predators; increase food consumption

- c) *Describe the scale and size of the project or property(s) to be acquired, and its proximity to protected, functioning, or restored habitats. (Fish Passage only projects and Diversions and Screening only projects [i.e., not a combination] need not respond to this question.)*

As can be seen in the supplied pictures and map, the project is positioned in the landscape in order to maximize the benefits of in channel protection afforded by the ELJs and restoration of off channel rearing habitat for juvenile salmonids. The off channel habitat is perhaps the most important feature of the project as the landowner is unwilling to allow removal of the existing dikes in order to allow us to reintroduce natural meander to the tidal and nearshore estuary. The off channel habitat is the next best alternative while the ELJ placed in the diked river channel will tend to recruit LWD providing cover and the development of pools in the channel over time.

It is hypothesized that these actions will affect several ecosystem processes including tidal hydrology, sediment movements, and cycling of organic matter. As a result of the dike breaching, new tidal channels will form, sediment will be deposited in the restoring marsh, and the development of a new plant community will result in more organic matter and food items being available. How new tidal channels develop (e.g., position, length and depth) will depend upon a number of factors such as where the dike is removed, how much of the dike is removed, size of the new wetland, and where in the estuary the new wetland is located. A number of habitat attributes will change. For example, opportunity will increase by adding new habitat that was previously unavailable. This will be further influenced by connectivity of the new channels. Habitat capacity will also increase as a result of more prey (such as insects) being produced as new vegetation grows.

Assuming the delta is at carrying capacity, the addition of new tidal habitat will increase the number of delta fry that can rear in the estuary, residence time of fish in the delta, and growth of fish associated with this life history strategy. Ultimately, the addition of the new tidal channels will increase population viability by altering the distribution and composition of life history strategies and increasing spatial structure by creating new habitat, thereby spreading the population out in space and time. Productivity will also be strongly affected because more salmon of one of the dominant life history strategies will survive which in turn will affect abundance of returning adults (Beamer et al. 2005).

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- d) *Describe the long-term stewardship and maintenance obligations for the project or acquired land. For acquisition and combination projects, identify any planned use of the property, including upland areas.*

The Hamma Hamma has been a test multi-species restoration river for 12 twelve years. Long Live the Kings, the WDFW, the HCSEG, the Robbins family and the Skokomish Tribe are an integral part to of this project by conducting adult surveys both live and dead as well as out migrating smolt surveys utilizing a screw trap and hundreds of hours of volunteer time in the process. Currently the community collation raises and performs research on Steelhead, Summer Chum, Fall Chum, Chinook and Pinks, and plans to continue indefinitely.

3) PROJECT DEVELOPMENT

- a) *List the individuals and methods used to identify the project and its location.*

The location, priority, and timing of the project are developed by the Lead Entity (HCCC) as a part of the Three-Year Watershed Implementation Priorities for Hood Canal Coordinating Council” after consultation with all the interested parties both public and private in the Puget Sound region.

Specific expertise utilized to initiate, plan, execute / control this project include:

- Lead Engineer – Pat McCullough, ESA Inc. Over 60 environmental projects completed in Hood Canal Watershed;
- Randy Johnson – WDFW;
- Bob Barnard – WDFW;
- Rich Carlson – USFWS;
- Margie Shirato – WDFW;

- b) *Explain how the project’s cost estimates were determined.*

The budget is complete and includes all elements required for successful implementation, including contingency planning, post construction data collection, and maintenance. Additionally it is favorably compared to typical project costs and benefits we have completed in the past.

The relationship between expected outcomes and total project cost compares favorably for similar completed projects at or near this project location.

- c) *Describe other approaches, opportunities, and design alternatives that were considered to achieve the project’s objectives.*

The two part conceptual model is straight forward and proposes a best management alternative to the landowner constraints addressed above. Using tried and true engineering and design criteria our plan reduces risk and ensures a high probability of success.

1. We are unable to secure permission to completely remove the existing south dike in order to add river meander and LWD. Therefore, we will

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strategically place Engineered Log Jams (ELJ's) to provide cover and create pools within the existing barren channel.

2. Through an existing natural breach in the south side of the south dike we will develop an approximate 2.5 acre off-channel habitat to be used primarily for juvenile salmonids.

The dike opening will be engineered in such a manner as to ensure sufficient flow through the breach in order to maintain water quality and quantity conducive to salmonid survival.

The excavated, contoured and planted off-channel habitat will function as an estuarine natal nursery, providing food, cover, and a conditioning environment for juvenile salmonids

- d) *Describe the consequences of not conducting this project at this time. Consider the current level and imminence of risk to habitat in your discussion.*

Without this project at this time the channelized river delta will further degrade an already degraded river estuary. Critical habitat will continue to be lost and the opportunity to restore the estuarine complex will be forever lost thereby denying another generation of ESA listed salmonids the opportunities afforded by a pristine, fully functioning river estuary and nearshore habitat.

- e) *Describe any concerns about the project raised from the community, recreational user groups, or adjacent land owners, and how you addressed them.*

No concerns have been raised by the community or adjacent land owners. Community and governmental landowners have embraced the restoration efforts and have avowed to become active stewards of the Hamma Hamma estuary restoration. Community members realize the positive economic impact a restored and pristine salmon bearing stream will have on the community and have volunteered to provide in kind support for the project.

- f) *Include a Partner Contribution Form, when required, from each partner outlining its role and contribution to the project. This form may be downloaded off the SRFB Web site. State agencies are required to have a local partner that is independently eligible to be a project sponsor. A Partner Contribution Form is also required from partners providing third-party match.*

Available in PRISM

- g) *List all landowner names. Include a signed Landowner Acknowledgement Form (available on the SRFB Web site) from each landowner acknowledging their property is proposed for SRFB funding consideration. If a restoration project covers a large area and encompasses numerous properties, Landowner Acknowledgement Forms are not required. For sponsors proposing work on their own property, this form is not required. For multi-site acquisition projects involving a relatively large group of landowners, include, at a minimum, signed Landowner Acknowledgement Forms for all known priority parcels.*

Available in PRISM

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- b) *Describe your experience managing this type of project. List the names, qualifications, roles, and responsibilities for all known staff, consultants, and subcontractors who will be implementing the project. If unknown, describe the selection process.*

The HCSEG was founded in 1990. During the subsequent nineteen (19) years the HCSEG has completed 121 separate ecosystem preservation, acquisition, and remediation projects at a total cost of approximately \$18,500,000.00. All projects have been completed in accordance with design criteria and the overarching project plan(s). This record of achievement and success indicates a near perfect probability of success on this project as well. Specific examples of our work can be accessed on our web site: www.hcseg.org.

Key project supporters include:

- 1) **Neil W. Werner – Project Manager**; Executive Director Hood Canal Salmon Enhancement Group.
- 2) **Kim Gower - Office Manager** responsible for general administrative business operations.
- 3) **Mona Pillers – Office Accountant** and Administrative Assistant responsible for the day to day functions of financial accounting; researches information for projects, grants and legislative policies.
- 4) **Pat McCullough, ESA Inc - Lead Engineer**. Over 60 environmental projects completed in Hood Canal Watershed
- 5) **Construction Contractor(s)** – The contractor will be selected following the best and final proposal submitted from a list of qualified (responsive & responsible) contractors maintained and updated annually by the HCSEG in accordance with standard policy and procedures.

Others may be selected with experience in near shore and estuary issues and familiar with Hood Canal Watershed prior to contract award(s). No additional expertise is anticipated for this proposed project.

4) TASKS AND SCHEDULE

- a) *List and describe the major tasks and time schedule you will use to complete the project.*

Major Project Tasks: (Pending Funding Award Schedule)

- 1) Land Owner Agreements – Obtained
- 2) Preliminary Engineering - Obtained
- 3) Permits - Obtained
- 4) Final Engineering Design – Obtained
- 5) Mobilization – Funding Authorization and Construction Window + one day
- 6) Augment access road – Mobilization + two days

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- 7) Construction of the new off channel habitat 5 – Access road complete + 3 days
- 8) Placement of ELJs Off channel construction + 2 weeks
- 9) Demobilization – Final grading and planting + 1 day
- 10) Monitoring – on going

CONSTRAINTS AND UNCERTAINTIES

- b) Each project should include an adaptive management approach that provides for contingency planning. State any constraints, uncertainties, possible problems, delays, or unanticipated expenses that may hinder completion of the project. Explain how you will address these issues as they arise and their likely impact on the project.*

The project design has considered a wide range of factors that could affect the outcome. To the degree that we have been able to predict the effects of climate change, which are very limited at this point, we have tended to over-engineer the ELJ's. Increased anchorage for the ELJ's are called for in order to counter the effects of an increased frequency of high water events similar to the storms of December 2007.

Our stated project goals and objectives will be achieved by the proposed very low risk actions. No other major constraints, uncertainties or delays are anticipated. The only unanticipated expense category of concern is that of fuel costs. That concern is mitigated by the HCSEG willingness to absorb the fuel cost differential over that planned and budgeted. Of course other issues may arise that, if left unmanaged, may hinder or delay the completion of the project on time, budget or meeting quality norms. The only sensible strategy is to closely manage the project and deal with or escalate problems or delays as they arise and before they have a chance to spiral out of control. Our team's ability to adaptively manage contingencies is proven and governed by our "readiness strategy".

Readiness-Building Strategy - Readiness for ecosystems restoration begins with the creation of a team dedicated to developing a coherent vision of a successful initiative. Our team is a cross-functional team, made up of scientific, technical, administrative, program / project management, education, and information systems personnel. Their mission is to develop a focused, aligned vision of how ecosystem restoration will meet specific needs articulated in the Governor's Puget Sound Partnership and the HCCC Recovery Strategy. Moreover the strategy is tailored to fit into the unique Hood Canal / Quilcene Bay environment. This team, along with the Lead Entity helps ensure buy-

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in and commitment from multiple stakeholder groups as buy-in is considered vital to a successful restoration project.

Our team is formed. We have completed the project assessment and prioritization (initiation) phase, and the planning phase. We have worked together over the years and we are ready to quickly and effectively complete the execution / control and close-out phases of this project.

Supplemental Questions

- 5) *PROJECTS INVOLVING ACQUISITIONS (Applies to both Acquisition-only and Combination Projects)*—Not Applicable
- 6) *FISH PASSAGE PROJECTS -- Answer the following questions:* Not Applicable
- 7) *DIVERSIONS AND SCREENING PROJECTS -- Answer the following questions:* Not Applicable

Hamma Hamma River, Washington



Figure 1 Hamma Hamma main channel looking northwest. Work area in the foreground



Figure 2 Aerial view looking west. Main channel and work area in lower left.



Figure 3 Hamma Hamma looking east. Hiway 101 in upper 1/3 of picture runs north/south. Work area in upper right.

